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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,228	02/09/2004	Yuji Harada	0171-1062P	8876

2292 7590 06/01/2005

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EXAMINER	
ASHTON, ROSEMARY E	

ART UNIT	PAPER NUMBER
1752	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/773,228	HARADA ET AL.	
	Examiner	Art Unit	
	Rosemary E. Ashton	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-14* is/are rejected.

7)☒ Claim(s) *2* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/9/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

No double patenting was found between the instant application and application no. 10/773,340 because the polymer in 10/773,340 has an extra carbon atom between the sulfonate oxygen and the R1-R3 groups and it does not have the ester monomer. Additionally, the claim in 10/773,340 has been amended to exclude hydrogen.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1,3-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al., publication no. US 2003/0054117 2003/0232277 filed 25 April 2003.

In claim 6 Sasaki teaches a positive photoresist composition comprising a polymer A2 having the same sulfonate monomer as claimed in formula 1a of the instant application. As stated in claims 6 and 9 the polymer has a sulfonate monomer of formula (I') shown below and at least one monomer having formulas (II') or (IV), both are shown below. Formula (II') is the same as formula 3b in claims 3 and 4 of the instant application and Formula IV meets the limitations of formula 4a in claims 5 and 6 of the instant application.

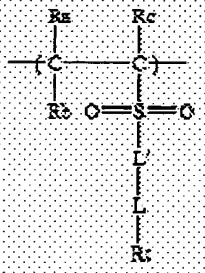
Formula (I') is the same as the sulfonate monomer in claim 1 when L' and L are single bonds and Rt is defined in section 137 as having acid labile groups.

6. A positive resist composition comprising:

(A2) a resin containing a repeating unit represented by the following formula (I') which increases the solubility in an alkali developing solution by the action of an acid, and

(B) a compound which is capable of generating an acid by irradiation of actinic ray or radiation:

(I')



wherein Ra, Rb and Rc each independently represents a hydrogen atom, a fluorine atom or a fluorinated alkyl group,

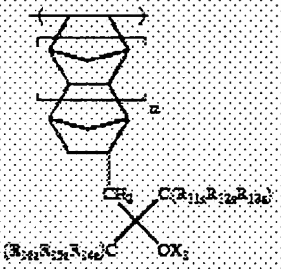
L represents a single bond or a binding group,

Rt represents an alkyl group, an alicyclic alkyl group, an aryl group or an aralkyl group, and

L' represents a single bond or an oxygen atom.

9. The positive resist composition according to claim 6, wherein the resin (A2) contains at least one type of repeating unit selected from the group consisting of repeating units represented by the formulae (II) to (IV):

(II)

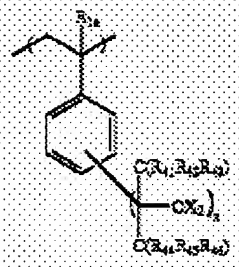


wherein R_{11a} to R_{16a} each independently represents a hydrogen atom, a fluorine atom or a fluorinated alkyl group, provided that at least one of R_{11a} to R_{16a} is not a hydrogen atom,

X_1 represents a hydrogen atom or a group decomposable by the action of an acid, and

m represents 0 or 1:

(IV)



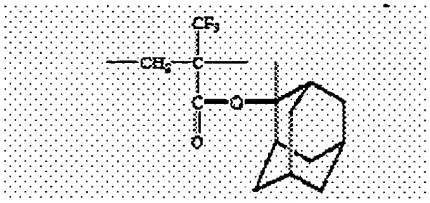
wherein R_{1a} represents a hydrogen atom, a fluorine atom, a chlorine atom, a bromine atom, a cyano group or a trifluoromethyl group,

R_{41} to R_{46} each independently represents a hydrogen atom, a fluorine atom or a fluorinated alkyl group, provided that at least one of R_{41} to R_{46} is not a hydrogen atom,

X_2 represents a hydrogen atom or a group decomposable by the action of an acid,

n represents an integer of 2 to 5, provided that R_{41} to R_{46} and X_2 may be the same or different when they each exists in a number of 2 or more.

Claim 11 teaches the polymer A2 contains an alpha trihalogenated acrylate ester shown in section 180 as having CF3 alpha substitution where R46 in claim 7 of the instant application is an acid labile methyl adamantly group as shown below. This monomer meets the limitations of claims 7 and 8 in the instant application.



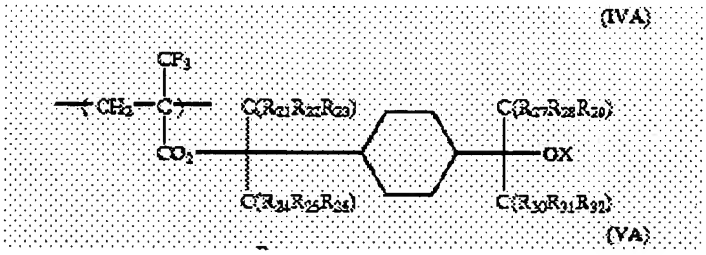
The polymer is used with a photoacid generator and a solvent to form a chemically amplified positive resist composition as in claim 9. As shown in Table II-2 the composition comprises a basic compound and claim 18 states it may have a dissolution inhibitor as in claims 10-12. Claim 12 teaches the weight average mol. wt. is 3,000 to 30,000 which is in the range claimed in claim 1 of the instant application.

The process of forming a pattern is disclosed in sections 350-351 and are coating the resist on a substrate, heating, exposing the resist to 157 nm using an F2 laser beam, heating and developing as in claims 13 and 14.

(IVA)

Sasaki teaches the second monomer in formula 1a of the instant application having formula ~~(IV)~~ shown below, however, it teaches the monomer is used in making polymer A1 not polymer A2. X is an acid labile group.

Ra 5/30/05



Thus, Sasaki does not teach the polymer A2 has the second monomer in formula 1a of the instant application.

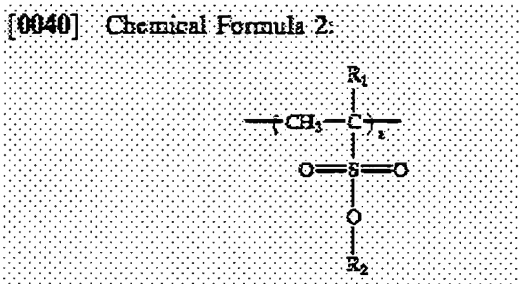
It would have been obvious to one of ordinary skill in the art to use the monomer IVA in polymer A2 with a reasonable expectation of obtaining a polymer for a positive resist composition because monomer IVA has an acid labile group, as do other monomers in polymer A2, and it is well known in the art that a polymer for a positive resist has acid labile groups so as to make the composition more soluble in aqueous alkaline developer by removal of the acid labile groups by the acid generated during exposure of the photoacid generating agent.

4. Claims 1,9,10,13,14 are rejected under 35 U.S.C. 103(a) as being obvious over Kishimura et al. publication no. US 2004/0029035 A1 in view of Oberlander et al. patent no. 6,844,131.

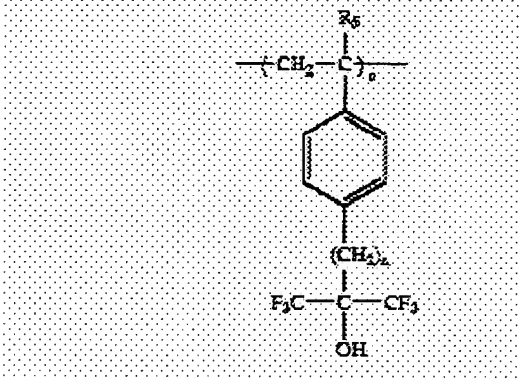
The Kishimura applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

As shown in sections 40-42 Kishimura teaches a polymer having the following monomers where R2 is an acid labile group. The polymer is used in a chemically amplified photoresist composition comprising the polymer, a photoacid generator and solvent. The composition is used in a patterning method of claims 13 and 14 where the exposure source is an F2 excimer laser (sections 119-122).

[0040] Chemical Formula 2:



[0041] Chemical Formula 4:



The polymer meets the limitations of polymer 1b in claim 1 of the instant application except chemical formula 4, above, is a styrene monomer not a phenyl acrylate as in the instant application.

In col. 7, lines 55-61 Oberlander teaches a polymer having a phenyl chromophore may be either a styrene or a phenyl (me) acrylate.

Ro 5/30/05

Thus, it would have been obvious to one of ordinary skill in the art to use a phenyl acrylate monomer, rather than a styrene monomer, in the polymer of Kishimura with a reasonable expectation of obtaining a polymer for a positive resist composition because Oberlander teaches they are equivalent chromophores in the art.

Allowable Subject Matter

5. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not anticipate or make obvious a polymer having the sulfonate monomers in claim 2 and the ester monomer of formulas 1a or 1b.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 571-272-1326. The examiner can normally be reached on Mon-Fri, 11:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rosemary E. Ashton
Primary Examiner
Art Unit 1752

May 30, 2005

ROSEMARY ASHTON
PRIMARY EXAMINER